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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/305,808	04/28/1999	WILLIAM A. SHULL	09712/032001	2662

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FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

EXAMINER

LEE, HWA S

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/305,808

Applicant(s)

SHULL ET AL.

Examiner

Andrew H. Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/5/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-33 is/are allowed.
- 6) ☒ Claim(s) 34-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 34-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill (6,137,574) in view of Kuhling et al ("Frequency doubling within the resonator of a Helium Neon laser" Laser und Optoelektronik).

Hill shows a dispersion interferometer (Figure 6A.) where a laser light source generates two harmonically related, single frequency output beams and the interferometer measures dispersion along a path to a measurement object using light derived from the two output beams.

Hill does not show that the laser source is a Helium-Neon laser light source. Kuhling et al show a Helium-Neon Laser light source for producing two harmonically related, single frequency output beams.

At the time of the invention, one of ordinary skill in the art would have used the Helium-Neon laser light source for the light source in Hill's interferometer because Hill shows that the critical requirement of the light source or the combination of light sources is that the resulting beams are to be two beams of different frequencies where each beam is orthogonally polarized and since Kuhling's laser produces such beams, one of ordinary skill in the art would have used Kuhling's laser in order to use the laser as a functional equivalent laser light source.

As for claims 39-46, Hill shows in Figures 11 through 12 a lithography system comprising:

- supporting a wafer on a moveable stage;
- a beam directing assembly (1106);
- positioning a first component relative to a second component to expose the wafer.
- imaging spatially patterned radiation onto the wafer;
- adjusting the position of the stage;
- measuring the position of the stage using interferometry;

Allowable Subject Matter

Claims 1-33 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:
The prior art of record taken alone or in combination, fails to disclose or render obvious a laser light source comprising the combination of:

- a Helium-Neon gain medium;
- a power source electrically coupled to the gain medium which during operation causes the gain medium to emit optical radiation at a first wavelength;
- a nonlinear optical crystal which during operation converts a portion of the optical radiation at the first wavelength into optical radiation at a second wavelength that is a harmonic of the first wavelength;
- an etalon; and

at least two cavity mirrors enclosing the gain medium, the nonlinear optical crystal, and the etalon to define a laser cavity, wherein during operation the etalon causes the cavity to lase at a single axial mode, and wherein at least one of the cavity mirrors couples the optical radiation at the first and second wavelengths into two harmonically related, single-frequency, output beams at the first and second wavelengths in combination with the rest of the limitations of claims 1 and 21.

Conclusion

1. Applicant's arguments with respect to claims 34-46 have been considered but are moot in view of the new ground(s) of rejection.

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center numbers are 703-872-9318 for regular communications and 703-872-9319 for After Final communications

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

- a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and
- b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa Lee whose telephone number is (703) 305-0538. The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703-308-4881.

Andrew Lee
Patent Examiner
Art Unit 2877
May 21, 2003



Frank Font
Supervisory Patent Examiner
Art Unit 2877